Dr. Josef Stefan I.

Mechanik

I. S. 90/91 M Smoluchowski

9'4
1'4

8

9
18'4 $\Big\}$ 9'4
10'4 $\Big\}$ 8

$\frac{9'4}{8} = 1'2$

10
24 $\Big\}$ 14
18'8 $\Big\}$ 5'2

14 : 5'2 = 2'8
46

53'902 : 50'75 = 1'0621
3152
107
6

4'30
4'59

4'59 : 4'30 = 1'067
29
3

53'92 : 50'75 = 1'062
317
13
3

2

5 : x = 9 : 1 BJ

x = 5 : 9 = 0'5555

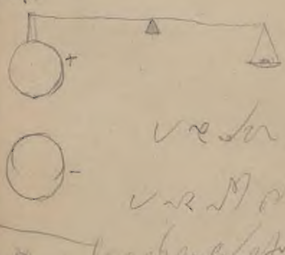
10/40

[illegible] 20

[illegible] = calorie = [illegible]

[illegible] m m^2 m^3 [illegible]

[illegible] [illegible/10]



[illegible] [illegible/10]

[illegible] 120 [illegible]

[illegible] 120 < [illegible]

Übersicht über Stefans Vorlesungen.

[illegible] Statik u. Dynamik

[illegible]

[illegible]

Differential-R. von Newton u. [illegible] Leibnitz

[illegible]

Discussion [illegible]:

$s = at^2 + bt + c$ [illegible]

$s = a \sin \alpha t$ [illegible]

[illegible] $f = \frac{d\left(\frac{u^2}{2}\right)}{ds}$

[illegible] $s = \int \varphi(t)\, dt$

[illegible]

[illegible] $u = \int \varphi(t)\, dt$

[illegible]

[illegible]

$\int dt = \int \chi(s)\, ds$

[illegible] $u = a\sqrt{s}$

7/11

[illegible]

[illegible] Galilei [illegible]:

1) [illegible]

2) [illegible]

[illegible] Galilei

[illegible]

[illegible] abs. [illegible] etc. [illegible]

[illegible]

11/11 [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

12/11 [illegible]

[illegible]

[illegible]

Kinematik [Geometrie [illegible]]

[illegible] 2 [illegible]

1). [illegible]

2). [illegible]

3). [illegible]

[illegible] centrip. [illegible] 13/11

[illegible] Project.

14/11

[illegible] 3 Keppler'schen [illegible]

[illegible] Centralkr[illegible]

[illegible] Gravitations[illegible] Keppler'schen [illegible] 18/11

[illegible]

[illegible] Ell. ; [illegible] RV [[illegible] O [illegible]] [illegible] 20/11

[illegible]

[illegible] Gravit. 21/11

[illegible] RV ; [illegible] RV.

Polar-Coordinaten.

[illegible] RV. 25/11

[illegible] Gravitations [illegible] Keppler'schen [illegible] Polarcoord.

26/11 [illegible] etc. [illegible]

[illegible]

[illegible]

[illegible] [illegible]

1). [illegible] 2). [illegible]

[illegible]

I. [illegible]

II [illegible]

27/11 a). Hypoth. $f(u)=u$
b). – $f(u)=u^2$ } [illegible]

28/11 [illegible] etc. [illegible]

[illegible] a). Hyp. $f(u)=u$; [illegible] etc.

2/12 b). Hyp. $f(u)=u^2$; maxim. [illegible]

3/12
4/12 } [illegible] R. S. [illegible] Newton'schen Gravit. [illegible] [illegible]
Discussion [illegible] – Ell – Hyp – Par [illegible]
constr. [illegible]

9/12 Kraftfunktion

[illegible]

potentielle & kinetische Energie [illegible] Energie

10/12 [illegible]

[illegible]

[illegible]

12/12 [illegible] II [illegible] die Centralk. [illegible]

16/12 [illegible]

[illegible]

[illegible]

17/12 [illegible]

[illegible]

[illegible]

7/1 [illegible]

[illegible]

8/1 [illegible]

9/1 [illegible]

13/1 [illegible]

14/1 [illegible]

Ellipsen [illegible]

1). [illegible]

15/1 2). [illegible]

16/1 [illegible]

[illegible] (2√) [illegible]

20/1 D'Alembert [illegible]

[illegible]

24/1 Lagrange' [illegible]

22/1 [illegible]

Σ [illegible]

23/1 [illegible]

([illegible])

[illegible]

27/1 [illegible]

28/1

29/1 Soldner'sches Th.

30/1 [illegible] △, ⏢, [illegible]

3/2 [illegible]

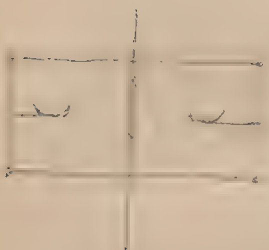
4/2 [illegible]

6/2 [illegible]

12/2 [illegible]

[illegible]

13/2 [illegible] [[illegible], Riemann, [illegible]] [illegible]



A

B

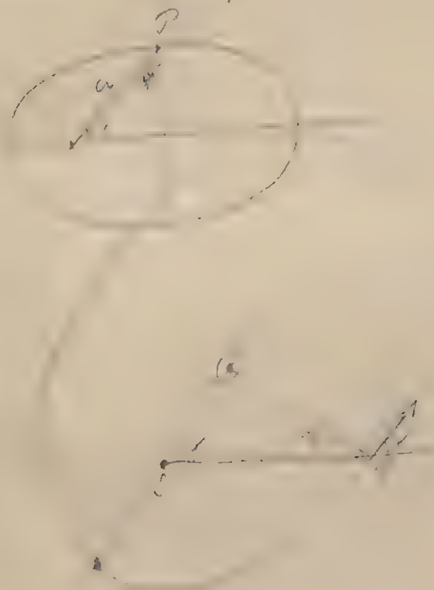
II.

Dr. Josef Stefan

Mechanik

I. S. 90/91. M. Smoluchowski

$$y = \sqrt{2\beta + \frac{\alpha^2}{4c^2}} \qquad \frac{2cy}{\alpha} = \sqrt{1 + \frac{8c^2\beta}{\alpha^2}}$$

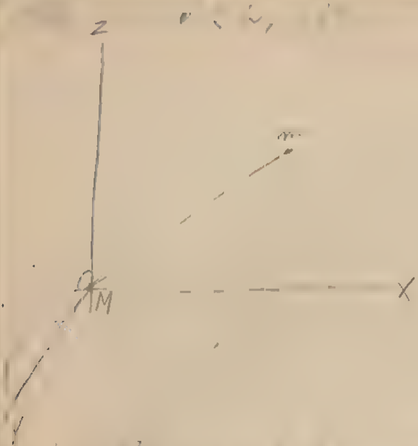

P

T ABC

X - A

Y - B

Z - C


Z
m
M
X
Y

$M \frac{d^2 \xi}{dt^2} = $ [illegible]

$M \frac{d^2 \xi}{dt^2} =$ $\qquad$ $m \frac{d^2 x}{dt^2}$

$\frac{M d^2 \xi}{dt^2} =$ $\qquad$ $m \frac{d^2 x}{dt^2} =$

$M \frac{d^2 \xi}{dt^2} + m \frac{d^2 x}{dt^2} = 0$

$M \frac{d \xi}{dt} + m \frac{dx}{dt} = A$

[illegible] $= A$

$my = \mathcal{B} + \ldots$

$mx = \ldots$

$\xi - mx$

$v = \dfrac{Mu + my}{\ldots}$

$\dfrac{\ldots}{M + m}$

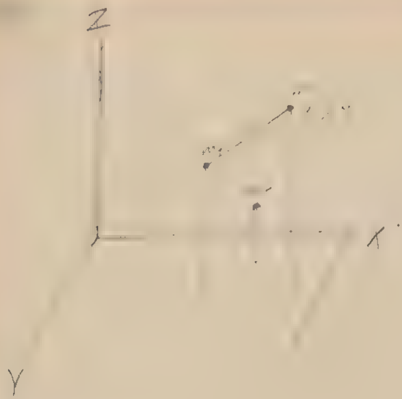
$= 0$

$= 0$

$= F$

$X = -k$

$X = -$



$X_1 =$ [illegible]

$X_2 = -$ [illegible]

$X = X_1 + X_2$

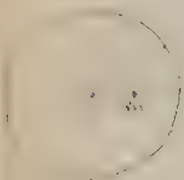
[illegible]

$X_1 =$ [illegible]

$X_2 =$ [illegible] $\qquad X_1 + X_2 = X =$ [illegible] $=$

[illegible]

[illegible]



[illegible]

[illegible]

[illegible]

$M = \frac{[illegible]}{3} N$ [illegible]

$k \frac{M}{r^2} m = [illegible]\, g$

$k \frac{[illegible]}{[illegible]} = g$ [illegible]

Dr. Josef Stefan

III.

Mechanik

I. S. 4 '91 M Smoluchowski

$\frac{mv^2}{2}$ [illegible]

$mv^2 - mv_1^2 =$ [illegible]

$= mg\, MP$

$MP =$ [illegible]

A.

$\frac{d^2y}{dt^2} + \dots \frac{dy}{dt} - \dots y = 0$

$y = A e^{\alpha t}$

$A e^{\alpha t}\left[\alpha^2 + 2b\alpha - \dots\right] = 0$

$\alpha = -b \pm \sqrt{b^2 - a^2}$

$\alpha_1 = -b + \sqrt{\quad}$

$\alpha_2 = -b - \sqrt{\quad}$

X Y Z

$\int x$ Z

[illegible]

X [illegible]

[illegible]

$= 0$

$X -$ [illegible]

$Y -$ [illegible]

$Z -$ [illegible]

[illegible]

[illegible]

$X \frac{dx}{\ldots} - V \ldots$ [illegible]

$= 0$

$X\,dx + \ldots = d \ldots$ [illegible]

[illegible]

$(x_2 - x_1)^2 + (z_2 - z_1)^2$

$(\delta z - \delta z_2) = 0$

C

$$m = F \cdot \mu$$

$$\xi = \frac{dF}{F}$$

$\frac{}{2} : 2$

$\sqrt{2\frac{\;-\;}{} - c'} = \frac{d}{\theta}$

$\theta = \frac{2}{\sqrt{2\,c^2}}$

$= \frac{[illegible]}{[illegible]} [illegible]$

$2 = [illegible]$

x

$\frac{dz}{dx} = \frac{\partial f}{\partial x} dx + [illegible]$

$= 1 + [illegible]$

$\frac{dz}{dx} = [illegible]$ | dx

$\frac{dz}{dx} = [illegible]$ | dx

$v =$

$X = -N$ [illegible]

$Y = $ [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

$\frac{1}{2}$ [illegible] $= -$ [illegible] y [illegible]

[illegible]

[illegible]

[illegible]

$\frac{d^2x}{dt^2} = -\frac{h}{\sqrt{1+x^2}}$ [illegible]

[illegible]

$\frac{dx}{dt} = +\frac{h\sqrt{\ldots}}{y}$

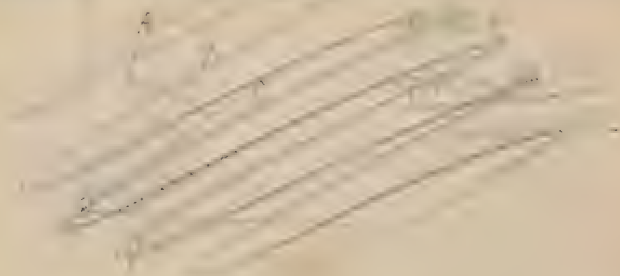
[illegible]

$N = \frac{v^2}{\rho} + g$ [illegible]

$y = -$

$x =$

$t =$



$= [illegible] \Big[a^{\frac{3}{2}} + \frac{1}{2} [illegible]$ [illegible]

$+ b a^{\frac{1}{2}} a_1 + \frac{1}{2}$ [illegible]

$= [illegible] \Big[a^{\frac{3}{2}} + \left(\frac{1}{2} + b\right) a^{\frac{1}{2}} a_1 -$ [illegible]

$[illegible] - \frac{1}{2} a^{-\frac{1}{2}} b \Big[a^{\frac{1}{2}} + \frac{1}{2}$ [illegible]

$- \frac{1}{2} [illegible] b^2 \Big[a + b^2 \Big[a^{\frac{1}{2}} + \frac{1}{2}$ [illegible]

[illegible] $\mu = \alpha$ [illegible]

[illegible] $m k$ [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

$X =$ [illegible]

[illegible] $m k$ [illegible]

$X = -$ [illegible] x [illegible] $+$ [illegible] $(\xi - x)$ [illegible] r' [illegible]

[illegible]

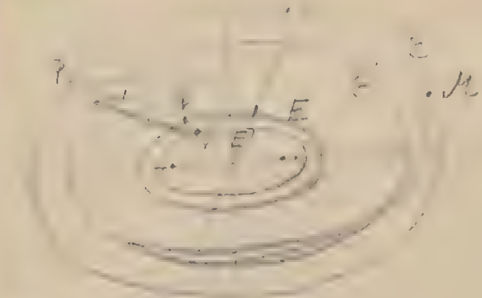
$V = -$ [illegible]

[illegible]

$n = \frac{1}{2}$

[illegible]

$r = \infty$ [illegible]



[illegible] $= 1$ E

[illegible] E' [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

$w' = w + \frac{\partial w}{\partial z} dz$

$\frac{\partial u}{\partial x} + \frac{\partial v}{\partial y} + \frac{\partial w}{\partial z} = 0$

[illegible] $= X$ [illegible]

$\frac{dx}{dt} = u \qquad u = f(t, x, y, z)$

$\frac{du}{dt} = \frac{\partial u}{\partial t} + \frac{\partial u}{\partial x}\frac{dx}{dt} + \frac{\partial u}{\partial y}\frac{dy}{dt} + \frac{\partial u}{\partial z}\frac{dz}{dt}$

$\frac{\partial u}{\partial t} + u\frac{\partial u}{\partial x} + v\frac{\partial u}{\partial y} + w\frac{\partial u}{\partial z} = X - \frac{1}{\rho}\frac{\partial p}{\partial x}$

$u = \frac{\partial \phi}{\partial x}$

$\frac{\partial^2 \phi}{\partial x \partial t} + \frac{\partial \phi}{\partial x}\frac{\partial^2 \phi}{\partial x^2} +$

$$m = \frac{\text{Sm.} \; [6'2 \cdot 10^{-8}]^3 \text{ cm}}{0'00062 \cdot 10^3}$$

$$b \gtrless 0$$

$$\frac{2\mu}{r_0} = v_0^2$$

$$v_0 = \sqrt{2K r_0}$$

$$b = v_0^2 - \frac{2\mu}{r_0}$$

$$\delta \text{ cm} = [\;] \; 0'00001 \text{ cm} = 10^{-5}$$

$$\frac{\mu}{r^2} = K = \frac{mk}{r^2}$$

$$K_m : K_t = \frac{mk}{10^{-10} \cdot 4} : \frac{k R^3 \pi \cdot 5'6}{R^2 \cdot 10^3}$$

771
850 . 7'5
5950
4250
64000

$$K_m : 10^3 = \frac{m}{4 \cdot 10^{-10}} : \frac{17}{10^3} \cdot 6400 \cdot 10^5$$

36
244
3844
23064
2088
28328

$$K_m = \frac{\cancel{10^3} \; [6'2 \cdot \cancel{10^8}]^3 \; \cancel{10^7} \cdot 0'07 \cdot \cancel{10^7}}{4 \cdot \cancel{10^{-10}} \cdot \cancel{0'000}62 \cdot \cancel{10^3} \cdot 17 \cdot 64 \cdot 10^7 \; 10^5}$$

$$v_0 = \sqrt{\frac{2'38 \cdot 2}{68 \cdot 9 \cdot 10^{17}}} = \frac{1}{109}$$